AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

39. – 89. (Canceled) Please cancel the claims without prejudice or disclaimer of the subject matter contained therein.

90. (New) A method of treating and processing alkaloid, oil and protein-containing lupine seeds for extraction of products from the lupine seeds by targeted fractionation, so that comminuted lupine seeds are de-oiled by introducing a solvent and a residue is depleted of substances soluble in an acid range, by adding acids, comprising comminuting and/or shaping the lupine seeds to form discoid flakes so that after pre-crushing of the shelled or non-shelled seeds, comminution of the seeds is carried out by a cooled flocculating roller, and heating the seeds by an indirect supply of heat substantially with exclusion of water, and performing after de-oiling depletion of the flakes of substances soluble in the acid range, by aqueous extraction, with a refined product of a reduced alkaloid level and an aqueous extract being obtained.

91. (New) A method according to claim 90, wherein the seeds are screened by shape and size prior to comminution and/or shaping and are subsequently shelled.

92. (New) A method according to claim 90, wherein the shelling is carried out with a technique wherein the lupine seeds are halved and separated from the shells.

93. (New) A method according to claim 90, wherein the flocculating roller is cooled to a temperature lower than a denaturation temperature of the lupine proteins.

94. (New) A method according to claim 90, wherein the discoid flakes have a platelet thickness of less than 1 mm.

95. (New) A method according to claim 90, wherein the indirect heat supply is carried out by a heat pan.

96. (New) A method according to claim 90, wherein the indirect heat supply deactivates seed-inherent enzymes, while proteins therein substantially retain native properties.

97. (New) A method according to claim 90, wherein ethanol is used as a solvent to perform the de-oiling.

98. (New) A method according to claim 90, wherein one of hexane, pentane, hexane, heptane or supercritical CO_2 is used as a solvent for de-oiling the discoid flakes.

99. (New) A method according to claim 97, wherein de-oiling is combined with a mechanical oil separation process with the mechanical oil separation process using an ethanol water mixture in combination with centrifuging.

100. (New) A method according to claim 90, wherein solvent is removed from the de-oiled discoid flakes.

101. (New) A method according to claim 100, wherein removing the solvent is carried out under substantially water-free conditions.

102. (New) A method according to claim 100, wherein removing the solvent is carried out with a superheated solvent.

103. (New) A method according to claim 90, wherein indirect heating of the de-oiled flakes is carried out with a heat pan.

104. (New) A method according to claim 90, wherein an oil percentage of the flakes which have been de-oiled and de-solvented, relative to the percentage of dry solids, is lower than 2%.

105. (New) A method according to claim 100, wherein the flakes which have been de-oiled and de-solvented are passed on to a disembitterment process including:

first supplying the flakes into an aqueous acid medium for isolation of substances soluble in the aqueous acid medium for obtaining an aqueous acid extract as a refined product insoluble in the acid range; and

second supplying the refined product, which is insoluble in the acid range, into an aqueous alkaline medium for obtaining aqueous extracts and alkaline refined products insoluble in an acid range.

106. (New) A method according to claim 90, wherein shells are added to flakes which have been de-oiled and de-solvented, which are passed on, together with the flakes, to a disembitterment process comprising:

first supplying flakes with the shells into an aqueous acid medium for isolation of substances soluble in the acid medium to provide an aqueous acid extract and a refined product insoluble in the acid range, and second supplying the refined product, which is insoluble in the acid range, into an aqueous alkaline medium for obtaining aqueous extracts and alkaline refined products insoluble in an acid range.

107. (New) A method according to claim 106, wherein prior to the addition of the shells to the flakes, the shells are ground.

108. (New) A method according to claim 105, wherein the aqueous acid medium in the first supplying the flakes has a temperature lower than room temperature.

109. (New) A method according to claim 105, wherein carrying out isolation of the aqueous acid extract from the refined product insoluble in the acid range is performed by centrifuging in a decanter, and the decanter is cooled and flushed in water or an extract in a zone of a solids accumulator.

110. (New) A method according to claim 105, wherein in the second supplying uses a temperature for extraction in the aqueous alkaline medium higher than room temperature.

111. (New) A method according to claim 105, wherein the first supplying the flakes is in a multi-stage aqueous acid process, and further comprises adjusting a ratio between the refined product insoluble in the acid range and the aqueous extract to less than 10:1 with one part of an aqueous extract from the aqueous extract being admixed.

112. (New) A method according to claim 105, comprising adjusting a ratio between the refined product insoluble in the acid range and an aqueous extract of more than 10:1 with an outward transfer of one part of the aqueous extract being carried out within an immediately preceding process.

113. (New) A method according to claim 103, comprising:

using a separator to obtain from the aqueous acid extract an isolation of substances so that a product is obtained having a concentration of dry solids of at least 10%, a protein concentration in the dry solids higher than 70%, and an alkaloid level lower than 0.5%.

114. (New) A method according to claim 113, wherein using isolation of the substances by means of a separator is carried out in a first process step using aqueous acid process steps, and the isolation of the substances is carried out after one of the first process steps or a preceding process step.

115. (New) A method according to claim 105, wherein aqueous extraction includes a closed circuit performing a process comprising:

suspending the de-oiled flakes in water at a pH level of substantially between 3.5 to 5.5 for separation of substances soluble in the acid range;

performing protein extraction by mixing suspended flakes with lye at a pH level between 7.0 and 8.5;

separating the suspension of the de-oiled flakes by a decanter to obtain a refined product and the protein extract;

supplying an acid medium to the protein extract to achieve fractioning of whey and protein curds; and

supplying the whey completely to pre-extracted flakes at a pH level of substantially between 3.5 to 5.5.

116. (New) A method according to claim 115, wherein protein extraction is carried out in pH level stages for achieving protein fractioning.

117. (New) A method according to claim 115, wherein the refined product has a protein concentration less than 20% in the dry solids, a roughage percentage higher than 60%, and a percentage of soluble carbohydrates lower than 5%.

118. (New) A method according to claim 115, wherein:

carrying out isolation of the whey and the protein curds containing more than 85% of proteins in the dry solids by a decanter.

119. (New) A method according to claim 118, wherein:

first purifying the extracted whey by means of a separator, then second purifying the whey of the first purification with a thermal treatment in a separator.

120. (New) A method according to claim 119, wherein:

the twice purified whey is supplied into said process again, wherein the solids obtained in a first separation are subjected to further processing in a protein string with outward transfer of the solids obtained in another separation.

121. (New) A method according to claim 115, wherein the refined product is fractioned by particle sizes into at least 2 fractions during or after a drying process.

122. (New) A method according to claim 115, wherein:

drying pressed protein curds to have a protein dispersibility index (PDI) of 60 to 90% and a water-absorption capacity of less than 2 g/g at a pH level of about 7 and a temperature of 20 to 30°C.

123. (New) A method according to claim 115, wherein:

confectioning protein curds by a hydro-thermal treatment to form a water binding product, by application of a temperature higher than 65°C, for drying the protein curds and with a water percentage at a beginning of drying of less than 85%, while a water absorption capacity of the water binding product is higher than 4.0 g/g.

124. (New) A method according to claim 90, wherein:

mixtures of roughage and the protein isolates are produced, having protein level ranging between 20 and 70%, roughage concentration ranging between 30 and 80%, and a water absorption capacity being higher than 5 g/g.

125. (New) A method according to claim 90, wherein shells, separated prior to the de-oiling, are mixed and dried with the aqueous extract at pH levels from 3.5 to 5.5

126. (New) A method of treating and processing alkaloid, oil and protein-containing seeds for extraction of products from the seeds by targeted fractionation, so that comminuted seeds are de-oiled by introducing a solvent and a residue is

depleted of substances soluble in an acid range, by adding acids, comprising comminuting and/or shaping the seeds to form discoid flakes so that after pre-crushing of the shelled or non-shelled seeds, comminution of the seeds is carried out by a cooled flocculating roller, and heating the seeds by an indirect supply of heat substantially with exclusion of water, and performing after de-oiling depletion of the flakes of substances soluble in the acid range, by aqueous extraction, with a refined product of a reduced alkaloid level and an aqueous extract being obtained.

127. (New) A method in accordance with claim 126, wherein the seeds are selected from the group consisting of rape, linseed, soybeans, peanuts, peas and horse peas.

128. (New) A method according to claim 93, wherein the denaturation temperature is lower than 35°C.

129. (New) A method according to claim 97, wherein thickness of the flakes ranges between 200 and 400 µm.

130. (New) A method according to claim 102, wherein the superheated solvent is hexane.

131. (New) A method according to claim 104, wherein the oil percentage is less than 1%.

132. (New) A method according to claim 107, wherein a size of the comminuted seeds is less than 5 mm.

133. (New) A method according to claim 110, wherein:

the temperature for extraction ranges between 35°C and 45°C.

134. (New) A process according to claim 113, wherein:

the concentration of dry solids is higher than 16%, the protein concentration in the dry solids is higher than 85% and the alkaloid level is less than 0.1% in the dry solids.

135. (New) A process according to claim 117, wherein:

the roughage concentration is higher than 70% and the percentage of soluble carbohydrates is lower than 1%.

136. (New) A method according to claim 118, wherein the whey and the protein curds contain more than 90% proteins in dry solids.

137. (New) A method according to claim 121, wherein:

the refined product is refined by particle size into at least three fractions during or after a drying step.

138. (New) A method according to claim 123, wherein:

the temperature is higher than 85°C, a water percentage at the beginning of drying is less than 75% and the water absorption capacity of the water binding product is higher than 5 g/g.

139. (New) A method according to claim 124, wherein the water absorption capacity is higher than 7 g/g.